A System Pathology of an Organization: The Rise and Fall of the Old Saturday Evening Post

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A System Pathology of an Organization: The Rise and Fall of the Old *Saturday Evening Post*

Roger I. Hall

The peculiar circumstances surrounding the demise of mass circulation magazines, such as *Life, Look,* and the old *Saturday Evening Post,* are explained from a systems point of view. The methodology of System Dynamics together with a corporate framework is applied to modeling a typical large magazine publishing company. The advantages and pitfalls associated with this methodology are discussed. The assumptions built into the model are tested by an empirical study of the old *Saturday Evening Post.* Experiments with a simulation version of the model lead to an understanding of how the system reacts, both in the short and long run, to changes to the management control variables such as subscription and advertising "rates." This understanding of the dynamic relation among the parts of the publishing system is used as a basis for interpreting the phases of the rise and fall of the old *Saturday Evening Post.* Similarities to other magazines are noted and some implications are drawn for this method of studying the systemic pathology of organizations.[1]

Considerable interest has been generated in the plight of the large publishing firms. For instance, the Curtis Publishing Company was eclipsed in 1969 with the death of the *Saturday Evening Post* after a series of panic measures that included canceling subscriptions to reduce production costs (Friedrich, 1970; Culligan, 1970). The Cowles Communications Inc. announced a planned reduction in circulation and advertising rates of the *Look* magazine following a period of financial loss (Dougherty, 1970) and stopped publication in 1971. A similar move was made by the Time Inc. over its magazine, *Life,* following a poor reported financial performance *(Wall Street Journal,* 1970) before *Life* also was discontinued. Conflicting reasons have been given for the demise of these magazines: competition with other media, such as T.V., sharply rising printing and postal costs, substantial increases in the cost of acquiring additional readers, lost touch with readers, erratic behavior of advertisers, and plain bad management (Dougherty, 1969, 1970a, 1970b; *Saturday Review,* 1970; Friedrich, 1970).

At the time of its initial crisis, each of these magazines reported its highest circulation and largest revenue. There must be an explanation for such a paradoxical situation wherein a record circulation and revenue is associated with poor profit performance. It is hardly credible that a large number of the leading magazines were being mismanaged simultaneously. These magazines continued to grow in spite of keen competition with other large circulation magazines and other mass-communications media until they reached a critical point in their history. This suggests that the pathology of magazine publishing is, perhaps, a complex phenomenon.

The economics of a magazine publishing firm is complicated by the fact that its revenues come from two different but related sources—advertising revenues and circulation revenues. They are related by the number of readers of the magazine. Obviously, circulation revenues are directly related to the readership. Advertising revenues, on the other hand, are indirectly related to readership since the price that adver-

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The author wishes to thank Dr. Leslie L. Roos for his incisive comments on a previous draft.

tisers are prepared to pay for magazine advertising space depends, to a large extent, upon the exposure of their advertisements. Also, if companies tend to finance readership growth out of current revenues, then the level of readership is also dependent, over time, upon itself. This suggests that a magazine publishing company may be viewed as a rather complex system of parts dynamically related over time, and that a systems study of magazine publishing may provide a convenient starting point for analyzing the interplay of the various forces at work in shaping the destiny of a company. This study will attempt to discover how much the structure of the system accounts for the observed behavior of large firms.

METHODOLOGY

System Dynamics as a System Modeling Methodology

System Dynamics (Forrester, 1968a) and its complementary computer system simulation language, Dynamo (Pugh, 1970), have been designed primarily to aid the modeling and simulation of complex dynamic feedback systems. As the modeling-simulation package adopted for this study, it offers a number of advantages over other modeling approaches (Day, 1974). First, it enables the researcher to maintain a one-to-one correspondence between his verbal description of the real world system of cause and effect and the flow diagram representing this causal chain, and between his flow diagram and the set of equations in the computer program to simulate this model of causality. Second, the flow diagram provides an excellent vehicle for communicating with managers in various parts of the system in order to solicit their perceptions of how the system works. Third, the rapid feedback of results from the simulation program—in particular the similarity or dissimilarity of the behavior of the model to the real world system—provides further clues to the researcher as to the aptness of the emerging model. Four, the new insights into the structure and operation of the system gained by the process can be quickly incorporated by redrawing the flow diagram and modifying the simulation program—easily accomplished in the Dynamo language since parallel processing renders the order of the equations unimportant—by repunching a few computer cards. Finally, the Dynamo language is very easy to learn, provides excellent diagnostics to the novice programmer and requires only very simple instructions to run, print tables, plot time-series of variables in the model, and gives the researcher the freedom to concentrate on conceptualizing the parts of the system under study and on mapping their interrelations. There is no necessity to make great mental leaps from the flow diagram of causality in the system to yet another flow diagram of the computational sequence in the computer.

However, the methodology is not without its critics. As Brewer and Hall (1973: 347), writing from a policy analysis framework, put it:

> A model is a theory. Acceptance of a computer program as 'good' social theory is dependent upon one's acceptance of the responsible theorist and his assumptions. It is important to know both. To the extent that these assumptions are unreasonable, the validity of the model is decreased, and to the extent that a model contains formal theoretical relationships not empirically obtained, the relevance of the model is decreased.

Formal computer models appear to be quite scientific. Without adequate understanding of the empirical context, without full realization of the embedded assumptions, and without appreciation of the exclusions and omissions, a potential user is easily led down the garden path. The enormous difficulty of specifying a model is not to be lightly dismissed by the so-called 'system engineer' who can model anything, any time, any place, for anyone.

The criticism is directed more at the modeler who tries to draw inferences from an unvalidated model, than at the methodology per se. This study will try to avoid this criticism by making explicit the assumptions built into the model and by supplying the empirical evidence to validate them. It is inevitable that we shall commit some sins of omission. An all-inclusive model would, after all, be as complex and intractable as the real world system under study. A purpose of model building is to abstract and simplify the phenomenon under study to make it comprehendible. The necessity for closure at some point automatically dictates that omissions have been made. Whether further enrichments of the model would result in a more valid or complete model that would justify the extra research work needed is always a matter of judgment to be argued.

The Model Building Process

System Dynamics or the Theory of Structure (Forrester, 1968b), is based upon the concept of a bounded system in interrelated parts. These parts comprise the essential system states and activities that characterize the firm's gross behavior with its environment. For example, the level of readership of a magazine can be conceptualized as a system state that changes from one time period to the next in response to the system activities, such as the inflow and outflow of subscribers to the readership level. The movement of readers in and out of the level of readership might be a function of the magazine's volume, price, and appeal in comparison with other magazines. The dynamic feedback characteristic of the system is imparted by the component interrelationships. For example, the cost of producing the magazine can be described as a function of the volume of the magazine (number of pages), which in turn is related to the amount of advertising purchased, which in its turn is related to the level of readership, and so on. In this manner, a typical magazine publishing company can be conceptualized by a system of temporally interrelated parts. The art in this kind of modeling lies in choosing a level of conception and a system boundary that includes the smallest number of components that will adequately describe the system of the firm in its environment.

Once conceptualized the system can be analyzed as if it were a wiring diagram of a self-controlling electronic device. Concepts from control engineering can be borrowed to facilitate the analysis of the system. For instance, some of the system's dynamic behavior can be predicted by identifying positive feedback loops—groups of parts forming a closed circular pattern of interrelationships—that will cause unrestrained growth in response to a change in the system, and negative feedback loops that will tend to counteract or limit system changes. If the system is too complex for this kind of analysis alone, then one can resort to a computer simulation model. The programming language, Dynamo, provides a ready-made kit to assemble such a simulation model.

The System Dynamics view of a company and its environment leads to the notion that the structure of the system accounts for a large part of the company's own peculiar growth and development. Complex systems with many feedback loops can give rise to counter-intuitive situations, whereby the intuitive judgmental decisions made by people in the system may, on occasion, not correct an out-of-control situation and may even make it worse (Forrester, 1970). A magazine firm, when viewed as a complex dynamic information feedback system, may exhibit such situations.

A Corporate Modeling Framework

The usual approach to building System Dynamic models is to structure the model around the basic feedback loops of the system (Nord, 1963; Packer, 1964; Roberts, 1964; Meadows, 1970), thus facilitating the interpretation of the structurally determined time-dependent behavior. This approach becomes less feasible for complex systems with many interact-

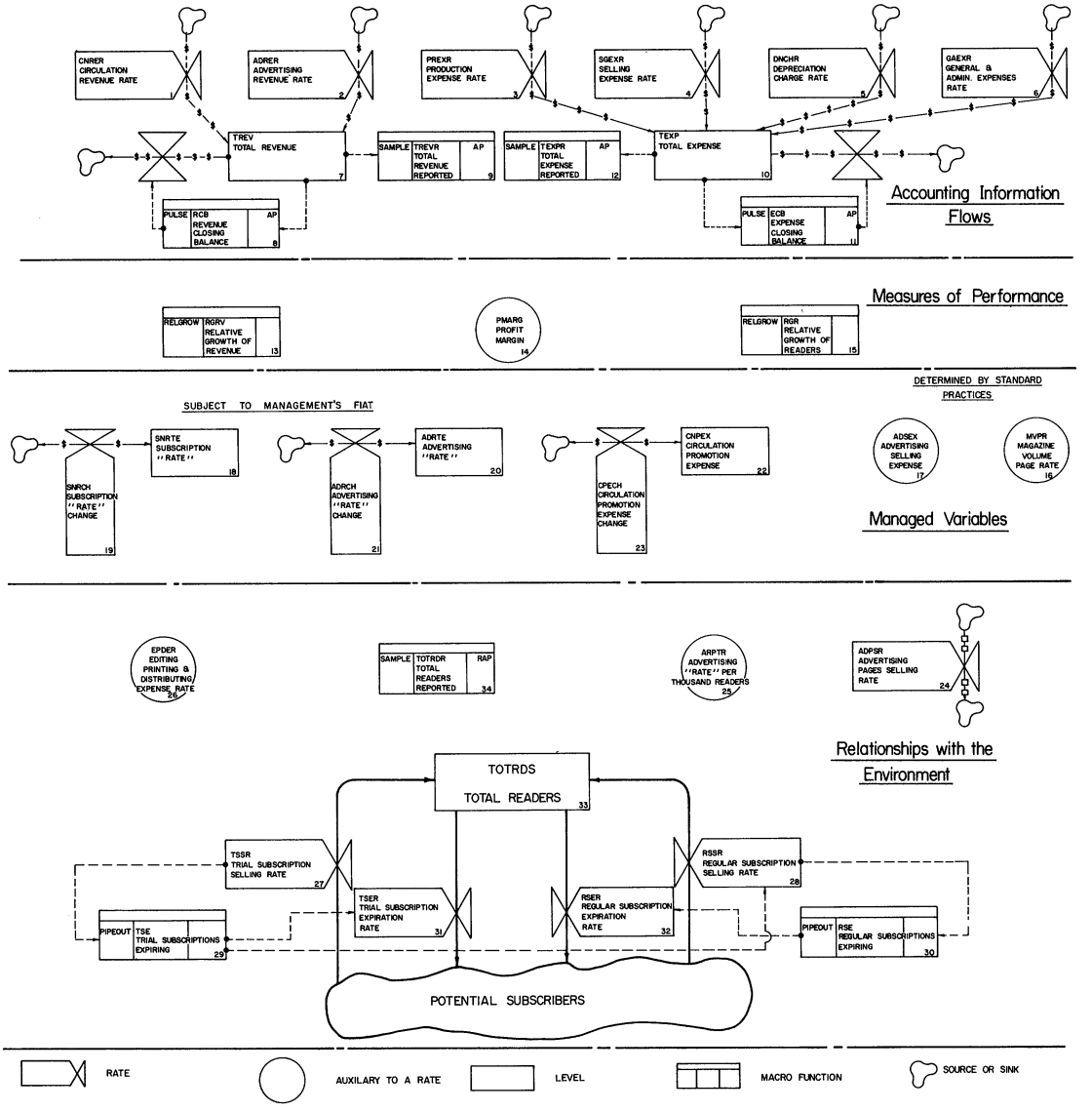


Figure 1. Corporate modeling framework.

ing components and intertwining feedback loops. In such circumstances it is replaced by a series of building blocks that partition the complex system into more tractable subsystems (Roberts *et al.,* 1968; Forrester, 1969, 1971; and Meadows *et al.,* 1972). Each subsystem can be built up independently from basic assumptions or empirical information about its inner workings, and connected to all the other similarly derived subsystems to form a complete system model. Due to the complexity of the magazine publishing system this latter strategy has been adopted and a corporate modeling framework used to subdivide the system into manageable portions.

The basic structure of the model of a magazine publishing firm is illustrated in Figure 1. It consists of four corporate building blocks: (1) accounting information flows, (2) measures of performance, (3) managed variables, and (4) relations of the firm with its environment.

The accounting information flows. This sector represents the accumulation of accounting information concerning total revenues and total expenses, the reporting of the end-of-year amounts, and the closing and clearing of the balances in the accounts so that the process may repeat itself in the following year. It is a simple analogue of the company's accounting processes.

The measures of performance. This sector represents the computation of three major performance indices thought to influence management decisions in magazine publishing companies: (1) the profit margin on total revenue as reported at year-end, (2) the relative growth of revenues, and (3) the relative growth of readers over the year in question.

The managed variables. This sector represents the major variables under the management's control: namely, the annual subscription "rate"[2] or price to be charged readers of the magazine, the advertising "rate" or price per page to purchase advertising space in the magazine, the annual circulation promotion expense for acquiring trial readers, the advertising selling expense, and the magazine volume (pages per year). It is assumed that the management can, if it so desires, manipulate these variables by a conscious decision-making process stimulated, perhaps, by changes in the measures of performance. Some of these variables are handled automatically. For example, it was discovered that both the advertising selling expense and the annual magazine volume are adjusted routinely by industry and company standard practices. Most magazines pay their advertising agents a standard commission on sales, so that the advertising selling expense varies directly with the advertising revenue earned. Similarly, magazines have editorial-advertising formulae which regulate the number of pages of text that the editor may publish for each page of advertising purchased in the magazine. The magazine volume, therefore, is related to the pages of advertising purchased. The other managed variables, that are subject to the management's fiat, are viewed as system states that remain unchanged unless the management makes a conscious decision to change them. For example, the subscription "rate" can be increased or decreased only by a subscription "rate" change decision. A similar representation

2

The magazine publishing industry uses the word "rate" to connote "price." On the other hand, the same word is used in System Dynamics terminology to mean "rate of flow." To avoid any confusion between the two uses of the word, when "price" is implied the word "rate" will be written in quotation marks.

is used to model changes to the advertising "rate" and circulation promotion expense. Since one of the unknowns in corporate simulation modeling concerns the mechanism by which the management of an organization decides how to change prices and promotion expenditures in response to changes in its measures of performance, these modeled decision points are used as experimental inputs. An arbitrary change, such as a 20 percent change in the subscription "rate," can be imparted to the model and its impact traced through the system to help understand the effect of these management controls on the system's performance.

Relationships with the environment. This sector represents the firm's interaction with its principal marketing and technical environment: namely, the flow of advertising pages purchased (advertising pages selling rate), the rate of expenditure on editing, printing, and distributing the magazine to the readers, and the rate at which subscriptions are sold or expire together with their effect on the total readers of the magazine. The rate of selling advertising pages is posited to be related to the unit price for advertising established by the industry (advertising "rate" per thousand readers). This in its turn is computed from the total readers reported at the year-end and the advertising "rate" per page set by the management. The dollar expenditure on producing and distributing the magazine is assumed to be a function of the total number of pages delivered to the readers, which in turn is computed from the magazine volume and the current total readers. The sale of trial subscriptions is assumed to be influenced by both the expenditure on circulation promotion and the magazine volume. Subscriptions are modeled as expiring one year after purchase. The sale of regular subscriptions are posited to be a function of the regular and trial subscriptions that are expiring and therefore potentially renewable, the magazine volume (number of pages in the annual volume) and the annual subscription "rate" charged. The total readers of the magazine are represented as a system state, the level of which changes in response to the flows of subscribers in and out of the system. The total number of readers is reported annually and provides the basis for computing the advertising "rate" per thousand readers.

The Completed Model

The informational linkages interconnecting the components of this corporate framework are shown in the completed model (Figure 2). These linkages consist of logico-mathematical relations and conversion relations. For example, component #2 (Figure 2), advertising revenue rate, is comprised of a simple mathematical extension of the components #24, advertising pages selling rate (pages per year) and #20, advertising "rate" ($ per page of advertising). When multiplied together, they determine the rate at which advertising revenue (dollars per year) is flowing into the total revenue account (#7). On the other hand, advertising pages selling rate (#24) is determined by the prices index, advertising "rate" per thousand readers (#25). It represents the decisional process of the advertisers in buying space in the magazine and involves the conversion of dimensions from dollars per page per thousand readers to pages per year. The conversion requires an empirical study of

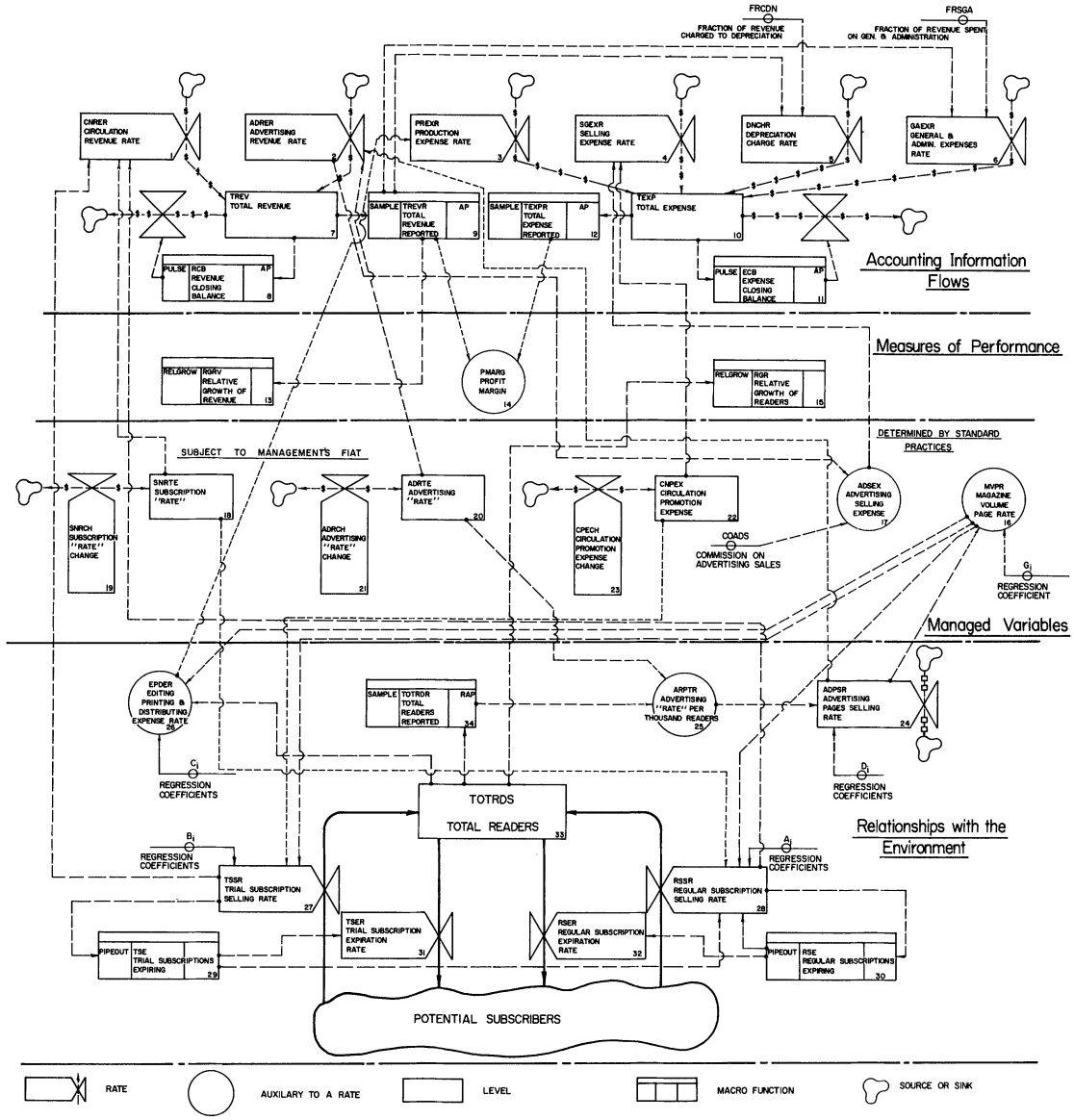


Figure 2. Model of a magazine publishing firm.

the buying behavior of advertisers to supply the needed coefficients of conversion. These conversion coefficients are shown in Figure 2 as the regression coefficients D_i. Figure 2, therefore, represents a working hypothesis of how a magazine publishing system functions and it requires testing before inferences can be drawn concerning how it behaves as a whole.

An Empirical Study

In contrast to many other System Dynamics studies, an attempt was made to base the model on statistically treated empirical data. As the authors of one such study note (Roberts, Abrams, and Weil, 1968: B-675):

> Empirical data were not available sufficiently to permit use of statistical techniques for deriving some critical market relationships . . . . Industrial Dynamics methodology does not insist upon such data availability, although added confidence in the model formulation does result when derivation of relationships can be enhanced by statistical analysis methods.

The soundness of any model, as measured by its ability to mirror reality, can be approached from two directions. Either the validity of the assumptions built into the model can be tested or the ability of the model to predict outcomes can be demonstrated. Obviously, if both can be achieved simultaneously, then the model is quite sound indeed. However, in practice we are rarely in this idyllic position and we have to build up confidence in our model from one direction or the other, depending upon the problem presented by the environment in gathering data and by the objectives of the study. Since the objective of this study is to use the model to understand how the system of magazine publishing works, rather than to build a model for some normative purpose, the former strategy of validating the assumption has been pursued. Fortunately, the wealth of data about the magazine publishing industry that is available over a period of 20 years or so, makes it possible to test empirically the assumptions built into the model. Therefore, we can have confidence in this partial model, because it is well fastened to reality through empirically based and statistically tested assumptions. This partial model tries to capture the essence of the publishing system; for example, how it reacts to changes instigated by the management of a magazine (such as changes to subscription or advertising ''rates''). It *does not* attempt to model the management's decision-making behavior, as for example, what variables under its control to change and by how much to change them in response to information fed back from the system. Therefore, because it is not a complete model, its predictive abilities cannot be compared with the actual behavior of companies as a means of validating the model. An attempt to complete the model and perform this acid test of simulation models would constitute a major piece of research and is outside the scope of this study.

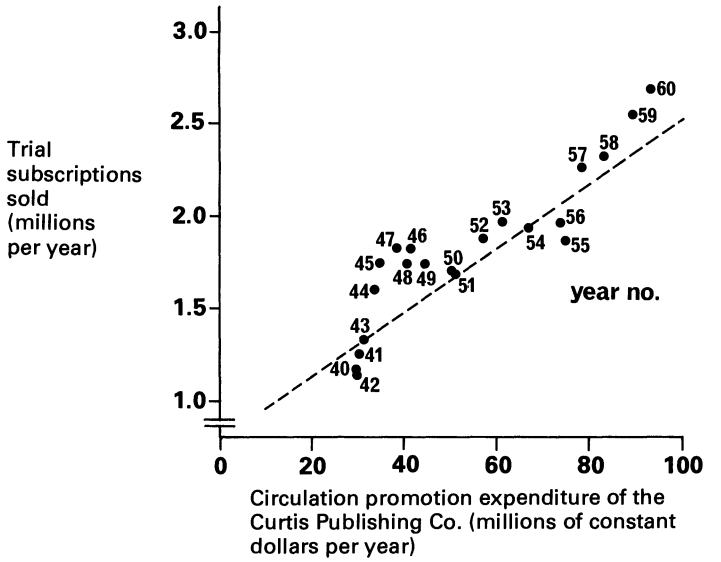
An Empirical Test of the Model

The assumptions built into this model were tested by an empirical study using data covering a 20-year period of the operations of the old *Saturday Evening Post.* The gathering, treating, and subjecting of the data to a regression analysis (Rao and Miller, 1971) was, itself, a considerable undertaking and is reported in detail elsewere (Hall, 1973). The values of the summary statistics, computed to assess the reliability of the estimates in the regression equations, lend credence to this model of a publishing firm as representing reality for the purpose in hand.

A measure of the strength of an assumption in a regression equation is the ratio of the coefficient of regression to the standard error of the coefficient: the higher the ratio, the more reliance can be put on the assumed relationships. In econometric studies, for example, a ratio of 1:1 is thought to be acceptable. For this study the smallest ratio exceeded 2.5:1 and the largest was of the order 30:1. The *R*-squared statistics, that estimate the proportions of observed behavior ascribed to these posited relationships, were all in the high .90s, the lowest being .95. Taking into account the number of data points available (usually 20) these results would seem to be acceptable.

Empirical Findings

The analysis did indicate that the major influence on trial subscription sales was the expenditure on circulation promotion (Figure 3). There is little to indicate that trial readers were becoming more expensive to acquire; on the contrary, from 1957 onwards, the technical revolution, brought about by new techniques of mass mailing reduced-price subscription offers, appears to have increased the efficiency of promoting the



Source: Association of National Advertisers, 1961, 1969; Moody's Industrial Manual, 1940–1960; Hall, 1973.

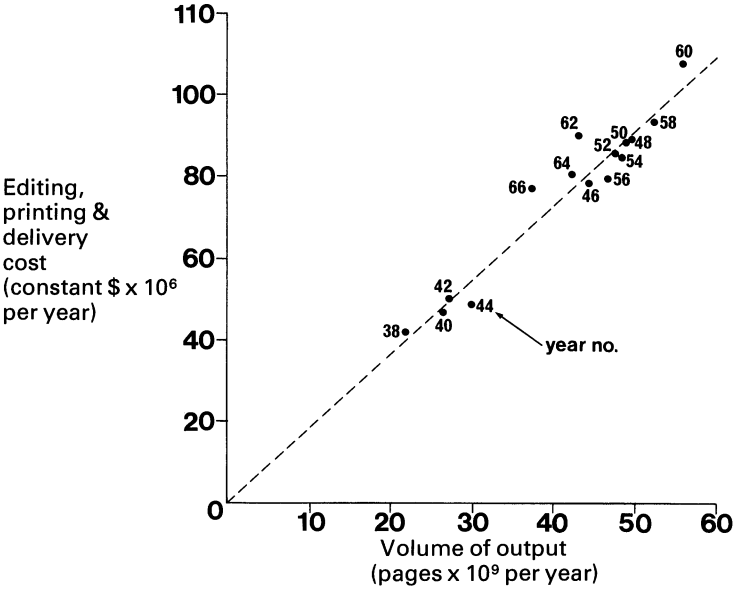
Figure 3. Trial subscriptions sold vs. circulation promotion expenditure.

magazine. Also, the fraction of regular subscribers who renewed their subscriptions was found to be strongly related to the subscription "rate" charged, and that the fraction of trial subscribers who convert to regular readership was markedly affected by the number of pages in the magazine's annual volume.

Surprisingly enough, no effect of editorial policy or quality of editorial content could be found on the subscription renewal behavior of readers of the old *Saturday Evening Post.* This does not mean that the quality of the editorial content in the magazine was unimportant, but rather that, one way or another, it remained constant over the 20-year period covered by the empirical study. Friedrich (1970: 478) noted that any one of the diverse personalities who occupied the editorial chair of the old *Saturday Evening Post* was or could have been successful, but that no amount of editorial genius could have made up for, what he considered to be, bad management. Presumably, as long as the editorial flavor of the magazine does not become out-of-date and the editor is able to keep more-or-less abreast of the changes in the tastes and social mores of his readership, then he maintains a loyal or, at the very least, a satisfied clientele.

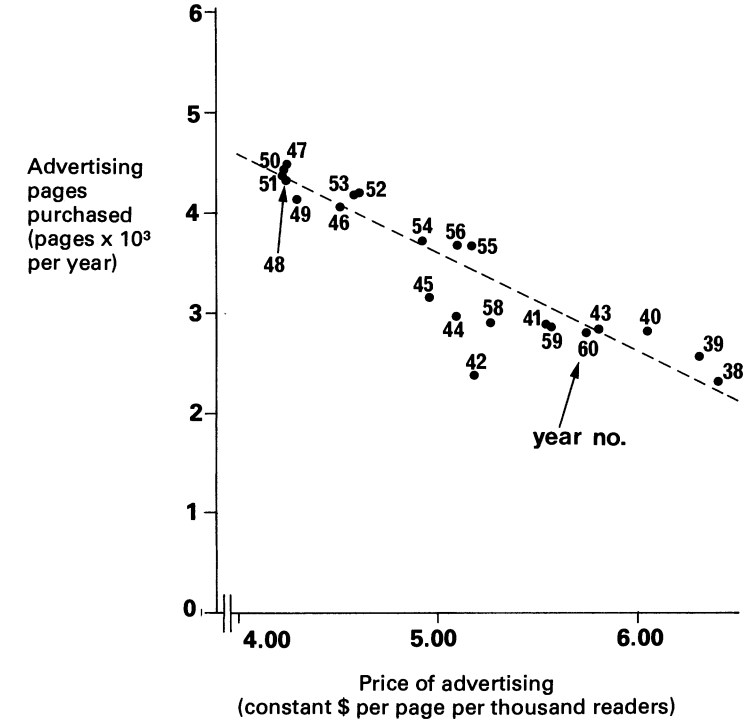
The yield of regular subscribers from the previous year's trial readers was found to be sensitive to the magazine's annual volume size. This suggests that the more articles published covering a broader range of subject matter, the greater the

chance that the trial reader might find something of interest to him personally that will influence his decision to become a regular subscriber. Once a reader becomes a regular subscriber, it seems that he acts as a satisfier who renews his subscriptions more-or-less indefinitely until he becomes dissatisfied by the raising of the subscription "rate."



Source: Moody's Industrial Manual (1940–1960); physical count of magazine pages by the author (Hall, 1973).

Figure 4. Production costs vs. volume of output—the Curtis Publishing Co.

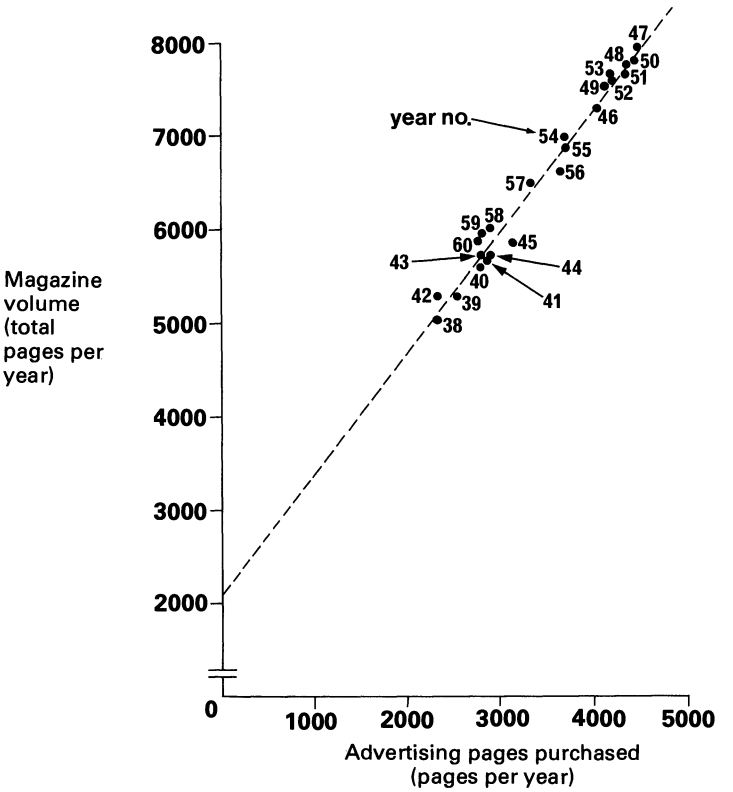


Source: Association of National Advertisers (1961, 1969); Advertising Age (1940–1960) & Hall (1973).

Figure 5. Advertising purchased vs. price of advertising—the old *Saturday Evening Post*.

The relationship of the company's production expenses to the volume of pages printed (Figure 4) suggest that, at least prior to 1960, increasing production costs per unit of output was not a factor to be considered. By 1960, however, the company was already in dire financial straits. Similarly, the relationship between advertising purchased in the magazine and the price charged for advertising (Figure 5) does not suggest capricious behavior by the advertisers, except for the year 1942 when an anti-Jewish article in the magazine incurred the displeasure of the advertisers who withdrew their support; thus forcing the resignation of the editor.

Of particular interest is the relation between pages in the annual volume and the amount of advertising purchased in the magazine, since this determines to a large extent the production costs and the renewal characteristics of trial subscribers. Friedrich (1970: 244) referred to it as the "traditional advertising-editorial formula, whereby an increase in the sale of advertising pages also permitted the publication of more editorial pages." The remarkable stability of this relationship over an extended period of the magazine's history is illustrated in Figure 6.



Source: Advertising Age (1940–1960) & physical count of magazine pages by the author (Hall, 1973).

Figure 6. Advertising-editorial relationship—the old *Saturday Evening Post.*

EXPERIMENTS WITH THE SIMULATION MODEL

Experiment #1 with a Free Running Model

The model was programmed in the Dynamo computer simulation language and run primed with the relationships uncov-

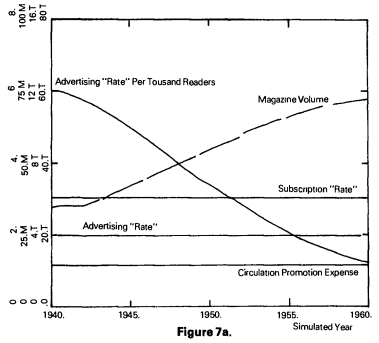


Figure 7a.

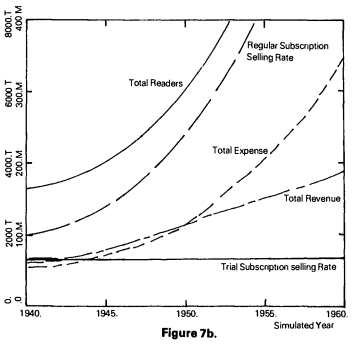


Figure 7b.

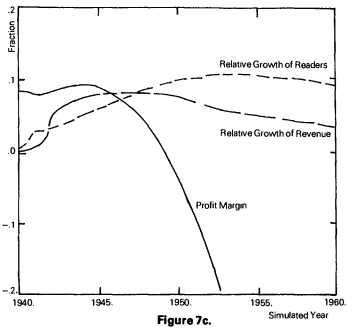


Figure 7c.

Figure 7. Experiment #1 response of free-running model.

ered in the empirical study and with the initial conditions appertaining to the old *Saturday Evening Post* in 1940. The results of this experiment are shown in the three plots of Figure 7. The three major managed variables of subscription "rate," advertising "rate," and circulation promotion expense in this experimental run, are fixed throughout the 20 simulated years (Figure 7a). However, since the circulation promotion expense is sufficient to acquire trial readers at a rate that more than offsets the natural loss of readers, the readership grows slowly in the first few years (Figure 7b). This growth reduces the price of advertising in the magazine (advertising "rate" per thousand readers), stimulates the sale of advertising pages which, through the editorial-advertising formula, causes the magazine volume to grow (Figure 7a). The increasing size of the magazine volume attracts a greater fraction of the trial readers to become regular readers and the regular subscription selling rate improves (Figure 7b). The consequent increase in total readers further reduces the price of advertising and the cycle repeats itself. This positive feedback in the cause and effect chain built into the model creates exponential growth of the total readers of the magazine. The effect of producing a thicker magazine and delivering it to an ever increasing number of readers, drives up the total expense of operating the firm at a rate that is faster than the increase in total revenues from circulation and advertising. The net effect on the measures of performance (Figure 7c) is that the profit margin declines very rapidly after the simulated year 1945. One might infer from this experiment that the system of publishing a magazine is potentially self-destructive.

The source of instability lies within the structure of the system in the form of the positive feedback loop, shown for greater clarity in Figure 8. Any change in the loop will be reinforced and feedback upon itself. Hence, an increase in readers, for example, will create a further growth of readers and a decrease in readers will cause a further reduction in readers. The system will have the tendency to grow or decay exponentially. If the system has this characteristic of running out of control, one would expect that it is difficult to manage.

Management's corrective actions. Since the profit margin is the only performance measure to go out of control, one might expect the management to initiate some sort of corrective action by manipulating the variables under its control. For example, revenues could be increased by (1) increasing the

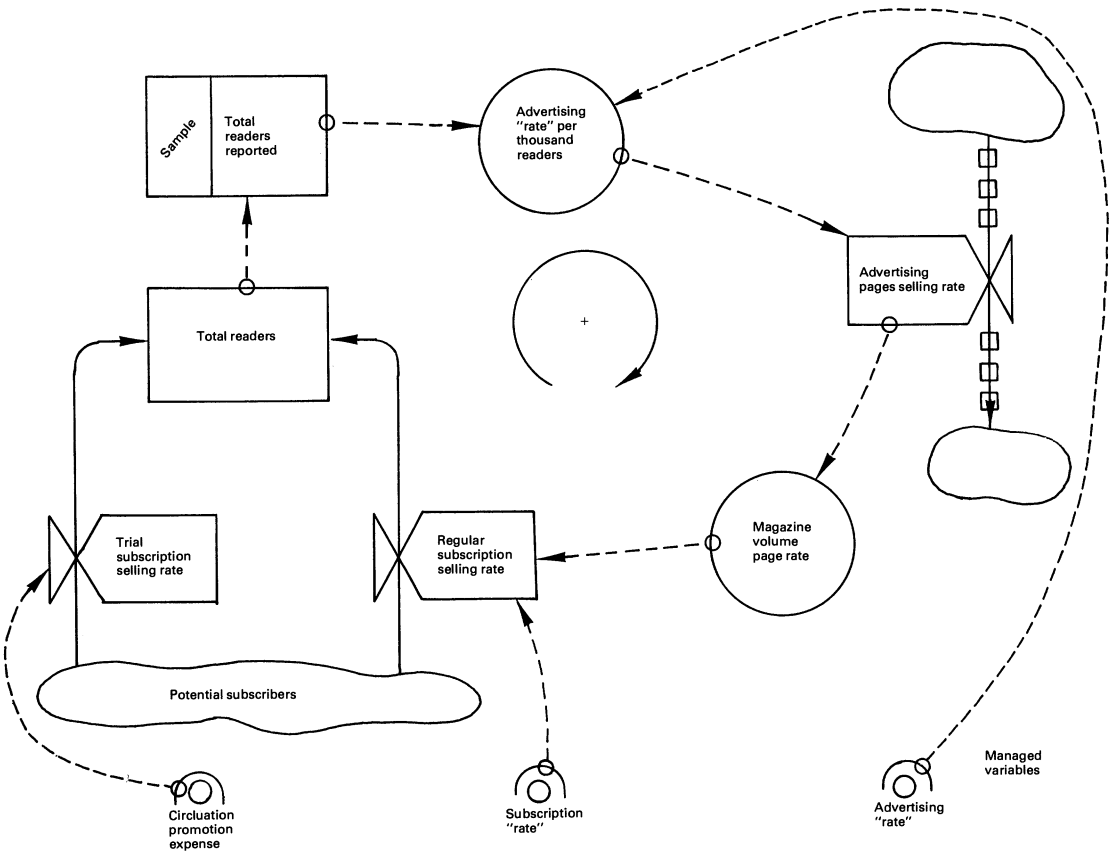


Figure 8. The source of growth, decay, and potential uncontrollability.

subscription "rates" or (2) increasing the advertising "rates," or alternatively, expenses could be reduced by (3) decreasing the circulation promotion expenditure. The relationships of these variables to the aforementioned positive feedback loop are shown in Figure 8. In order to test the sensitivity of the system to adjustments in these managed variables, each variable was charged in turn by an amount equal to 20 percent of its initial value.[3] The results of these experiments are described as follows:

Experiment #2

Increasing the subscription "rate." (Figure 9a) has an immediate ameliorating effect on the profit margin (Figure 9c).

[3] The experimental changes were introduced in the year that the profit margin began to decline, namely, the simulated year 1945. Choosing this year also circumvents a technical problem in simulation associated with a settling-down period for transient disturbances, caused by the initialization procedures (see Meier, Newell, and Pazer, 1969: 296–299).

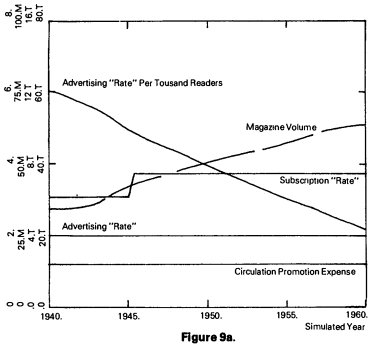


Figure 9a.

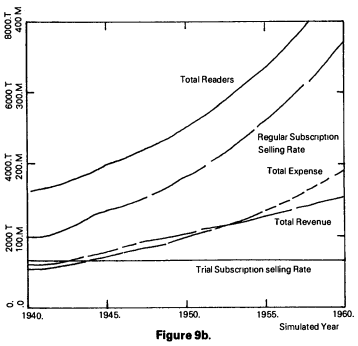


Figure 9b.

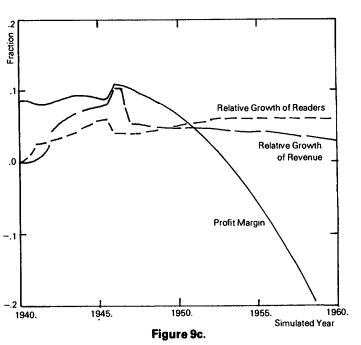


Figure 9c.

Figure 9. Experiment #2 response to a 20% increase in subscription "rate."

Unfortunately, this improvement lasts but for a few years before the performance deteriorates as before. Increasing subscription "rates" strikes at the company's most valuable asset, its regular subscribers (Figure 9b). Fewer subscribers means less revenue from circulation and advertising, so that both the long-run growth of readers and revenues are adversely effected (Figure 9c).

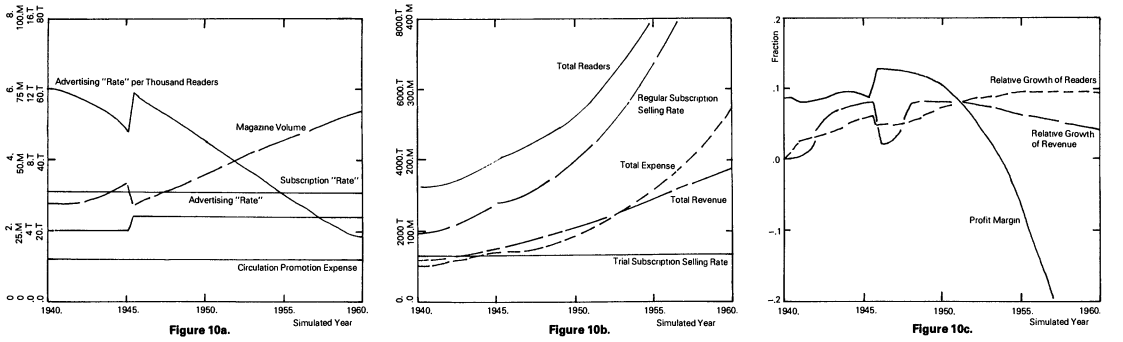


Figure 10. Experiment #3 response to a 20% increase in advertising "rate."

Experiment #3

Increasing the advertising "rate." Figure 10a has a similar immediate but transitory beneficial effect on the profit margin (Figure 10c). Perhaps a most unexpected and counter-intuitive relation is exhibited here between an increase in the advertising "rate" (Figure 10a) and a decline in the relative growth of readers (Figure 10c). This results from the increased advertising "rate" per thousand readers reducing the demand for advertising in the magazine and, then, through the time-honored editorial-advertising formula, reducing the magazine volume (Figure 10a). The temporarily smaller magazine volume becomes less attractive to trial subscribers and fewer buy regular subscriptions (Figure 10b) resulting in a decline in the relative growth of readers (Figure 10c). The temporary restraint on the growth of the magazine volume, however, reduces the printing costs—a major constituent of the total expense (Figure 10b)—and brings about the significant improvement in the profit margin (Figure 10c), albeit at the expense of the growth of regular readers.

Experiment #4

Decreasing the circulation promotion expenditure. This reduces the rate of selling trial subscriptions (Figure 11b). This in turn has a cumulative effect on the total readers because

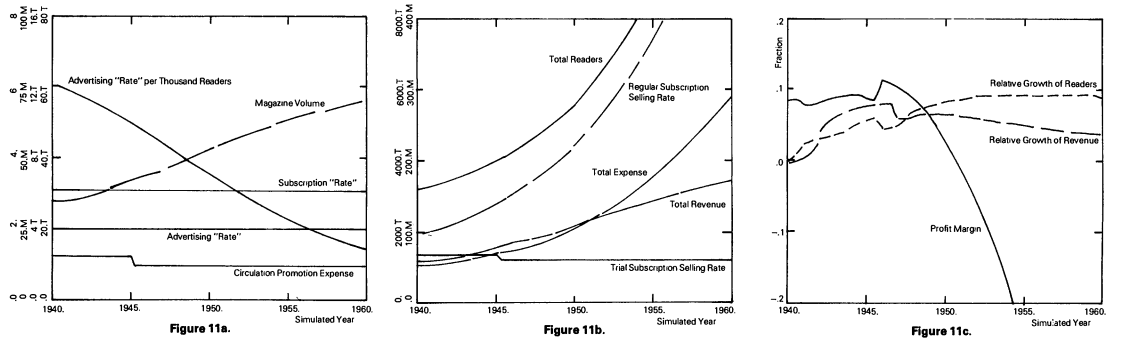


Figure 11. Experiment #4 response to a 20% decrease in promotion expenditure.

fewer subscribers are now being inducted into the system, which brings about a deceleration in the growth of readers through the mechanism of converting to regular readership in subsequent years. The growth process is further attenuated by the positive feedback loop described before. The reduced growth of readers slows the rate of decrease in the price of advertising which affects the advertising sales so that the magazine volume (Figure 11b) grows less quickly. This in its turn affects the fraction of trial subscribers who convert to regular subscribers, and so on. The net effect of these changes to the readership is to decrease significantly the relative growth of readers and to increase temporarily the profit margin (Figure 11c). The inevitable decline in the profit margin brought about by the firing-up of a positive feedback loop is delayed for about three years.

Management Decision Making in a Complex System

If the magazine's management is not aware of the complexity of these interrelations in the publishing system, it might easily be beguiled by the short-run, but transitory, corrective action of those variables under its control. For example, in competing against other magazines for readers, it might decide to substantially increase circulation promotion expenditure. To afford this strategy it might increase advertising "rates," which could result in a decrease in advertising pages purchased in the magazine, a decline in the magazine volume and a decrease in the yield of regular subscribers from trial subscribers. In order to achieve its growth goal, the firm might be prompted to further increase its circulation promotion expenditure and further increase its advertising "rates" to pay for this. Over an extended period of time, this could drive the firm from low to high circulation promotion expenditure and advertising "rate," and from publishing a thick to a skinny magazine. The firm, burdened with an extraordinarily high promotion expenditure to maintain the level of readership, is now vulnerable to such happenings as business cycles, inflation in production costs and increases in postal "rates." Any of these illnesses may strike the death blow to one already weakened by a wasting disease! The counter-intuitive behavior of such complex systems was noted by Forrester (1959: 110):

> With a high degree of confidence we can say that the intuitive solutions to the problems of complex social systems will be wrong most of the time. Here lies much of the explanation for the problems of faltering companies . .

THE RISE AND FALL OF THE OLD *SATURDAY EVENING POST*

By looking at some of the *Saturday Evening Post's* management's more significant decisions and by tracing their impact through the magazine publishing system, this section tries to explain the rise and fall of this distinguished magazine in terms of the dynamics of the entire system including the management decision processes. Tables 1 and 2 depict four distinct periods in the developmental history of the *Saturday Evening Post* between the years 1940 and 1960.

Phase 1: 1940–1944

During most of this period—the World War II years—the expansion of the company was inhibited by paper rationing.

Table 1

Revenues, Costs and Readers for the Curtis Publishing Company and the *Saturday Evening Post*

Year Ending	Total Revenue (c$m)	Circulation Revenue (c$m)	Circulation Revenue Fraction of Total Revenue	Advertising Revenue (c$m)	Advertising Revenue Fraction of Total Revenue	Production Costs (c$m)	Production Costs Fraction of Total Revenue	Promotion Costs (c$m)	Promotion Costs Fraction of Total Revenue	Total Readers (millions)
1940	97.4	23.4	.240	74.0	.760	46.7	.480	29.4	.302	3.25
1941	99.8	24.8	.248	75.0	.752	51.0	.511	29.8	.299	3.39
1942	89.7	28.3	.316	61.4	.684	51.2	.571	29.5	.329	3.33
1943	103.2	30.4	.294	72.8	.706	48.2	.467	30.9	.299	3.44
1944	110.7	32.6	.294	78.1	.706	48.5	.438	32.8	.296	3.39
1945	115.1	33.3	.290	81.8	.710	52.7	.458	33.7	.293	3.45
1946	146.9	40.7	.277	106.2	.723	78.2	.534	41.3	.282	3.78
1947	162.3	43.3	.267	119.0	.733	86.7	.534	37.9	.234	3.96
1948	163.1	47.0	.288	116.1	.712	89.0	.545	40.4	.248	3.90
1949	164.1	52.0	.317	112.1	.684	88.4	.539	42.0	.256	4.02
1950	177.9	60.1	.338	117.8	.662	88.5	.498	50.0	.281	4.03
1951	169.6	56.6	.334	113.0	.616	85.0	.501	50.6	.299	4.00
1952	175.9	59.1	.336	116.8	.664	86.0	.489	57.1	.325	4.22
1953	87.1	65.1	.348	122.0	.652	88.8	.475	61.1	.326	4.52
1954	184.9	66.0	.358	118.9	.642	84.4	.457	67.1	.364	4.59
1955	191.2	65.8	.344	125.4	.656	84.1	.440	74.6	.390	4.70
1956	192.2	66.1	.344	126.1	.656	79.5	.414	74.0	.385	4.91
1957	201.8	69.4	.344	132.4	.656	85.9	.426	78.6	.390	5.30
1958	200.7	72.9	.363	127.8	.637	93.0	.464	83.0	.414	5.75
1959	221.6	76.4	.345	145.2	.655	104.5	.472	89.3	.404	6.12
1960	225.2	78.2	.347	147.0	.653	107.9	.479	92.8	.412	6.30

Source: Association of National Advertisers (1961, 1969), Moody's Industrial Manual (1940–1960) & Hall (1973)
Money values expressed in millions of constant dollars (c$m)

The company raised the annual subscription "rate" from an average of approximately $3.00 to $4.80 constant dollars per subscriber; presumably as a device for simultaneously rationing the magazine, which was in great demand, and compensating for the loss of wartime advertising revenue. The combined effects of limiting the volume of the magazine to around 5,700 pages—thereby holding the production costs in check—and increasing substantially the circulation revenue, resulted in an unprecedented profit margin of 14 percent of revenues.

Table 2

A Summary of Performance Measures, Managed and Intervening Variables for the old *Saturday Evening Post*

Performance Measures (dimensionless)				Managed and Intervening Variables Subject to Management Decree				Intervening	Determined by Standard Practice
At year ending	Relative growth of revenue	Profit margin	Relative Growth of readers	At year ending●	Subscription "rate" ($/year)	Advertising "rate" (10^3 $/page)	Circ. promotion expense (10^6 $/year)	Advertising "rate" per thousand readers ($/page/thou. readers)	Magazine volume (pages/year)
				Phase 1					
1940	.08	.08	.05	1941	2.93	18.7	29.8	5.54	5666
1941	.01	.05	.04	1942	3.52	17.3	29.5	5.18	5332
1942	−.10	−.04	−.02	1943	4.15	16.9	30.9	5.80	5628
1943	.15	.11	.03	1944	4.50	17.3	32.8	5.10	5700
1944	.07	.14	−.01	1945	4.79	17.1	33.7	4.96	5822
				Phase 2					
1945	.04	.13	.02	1946	4.86	17.1	41.3	4.52	7336
1946	.28	.07	.10	1947	5.21	16.9	37.9	4.26	7920
1947	.10	.11	.05	1948	6.02	16.5	40.4	4.24	7780
				Phase 3					
1948	.01	.08	−.01	1949	5.97	17.2	42.0	4.29	7568
1949	.01	.08	.03	1950	5.97	17.1	50.0	4.23	7808
1950	.08	.10	.00	1951	5.52	16.9	50.6	4.23	7664
				Phase 4					
1951	−.05	.08	−.01	1952	5.40	19.5	57.1	4.61	7600
1952	.04	.07	.06	1953	5.36	20.8	61.1	4.59	7644
1953	.06	.08	.07	1954	5.34	22.7	67.1	4.94	6992
1954	−.01	.06	.02	1955	5.36	24.2	74.6	5.16	6896
1955	.03	.05	.02	1956	5.28	25.6	74.0	5.21	6616
1956	.01	.08	.05	1957	5.10	27.4	78.6	5.34	6490
1957	.05	.06	.08	1958	5.00	30.3	83.0	5.27	6038
1958	−.01	−.01	.08	1959	4.93	34.1	89.3	5.57	5932
1959	.10	−.01	.06	1960	4.85	36.1	92.8	5.74	5910

Source: Hall (1973)

● Assumes that the management took action to change the managed variables during the year following the report of unsatisfactory performance.

Phase 2: 1945–1947

During this time, the magazine underwent a period of almost unrestrained postwar growth. Its readership grew from 3.4 to almost 4 millions, its revenues grew from 115 to 162 million constant dollars, but its profit margin fell from 14 percent in 1944 to 7 percent of revenues in 1946. This phase of the magazine's history parallels experiment #1 with the free-running simulation model and can be interpreted as follows. The significant increase in readers lowered the price of advertising from $4.96 in 1944 to $4.24 constant dollars per page per thousand readers in 1947, which stimulated the advertisers to buy more pages of advertising in the magazine. This increase in advertising pages purchased was matched by an increase in editorial pages which caused a significant increase in the volume of the magazine. As can be seen from Table 2, the annual volume grew from 5,822 in 1944 to nearly 8,000 pages in 1946. As demonstrated in the model, an increase in annual volume will improve the yield of regular readers converting from trial readers; thus accelerating the growth of total readers. The net result of the larger readership and more voluminous magazine supplied to each reader was a crippling increase in the production costs from around 46 to 53 percent of annual revenues (see Table 1). Thus, the profit margin was depressed through the mechanism already described.

The management's action to counteract the drop in profit margin was to increase, quite substantially, the subscription "rate" from an annual average of $4.79 in 1944 to over $6.00 constant dollars per subscriber.[4] Why they should have adopted this policy is a matter for conjecture. Cyert and March (1963: 121) suggest one way organizations go about searching for a solution to a pressing problem:

> We assume that rules for search are simple minded in the sense that they reflect simple concepts of causality. Subject to learning . . . , search is based initially on two simple rules: (1) search in the neighborhood of the problem symptom and (2) search in the neighborhood of the current alternative. These two rules reflect different dimensions of the basic causal notions that a cause will be found "near" its effect and that a new solution will be found "near" an old one.

Applying these rules to the present case leads to the conclusion that the management would indeed choose the alternative of increasing the subscription "rate." For example, Table 1 shows that one symptom of the problem is that the fraction of total revenue supplied by the circulation revenue fell during the years 1946–1947. This would suggest increasing the subscription "rate," evidence being that the company had very successfully raised its profit margin during the war years by increasing the subscription "rate" making the increase in the subscription "rate" a current alternative solution.[5] The effect of increasing the subscription "rate," however, has been shown to have a detrimental effect on the fraction of regular subscribers who resubscribe (Figure 9). The growth of readers of the magazine, in consequence, leveled off. Hence this period of the magazine's history can be described as (1) unrestrained growth leading to a depressed profit margin, (2) management action based, presumably, on the symptoms of the problem and the most current alternative solution (namely, raising the subscription "rate"), rather than being based on the underlying causal structure of the problem (namely, the loss of control of the annual volume and the consequent

4

Equivalent to about 12 (1970) dollars.

5

This raises the exciting prospect that available theories of organizational decision making could be operationalized and pressed into service for simulating the collective intuitive corporate decision processes.

increase in production costs), and (3) stagnation in the growth of readers due to the drop in renewal rate of regular subscribers.

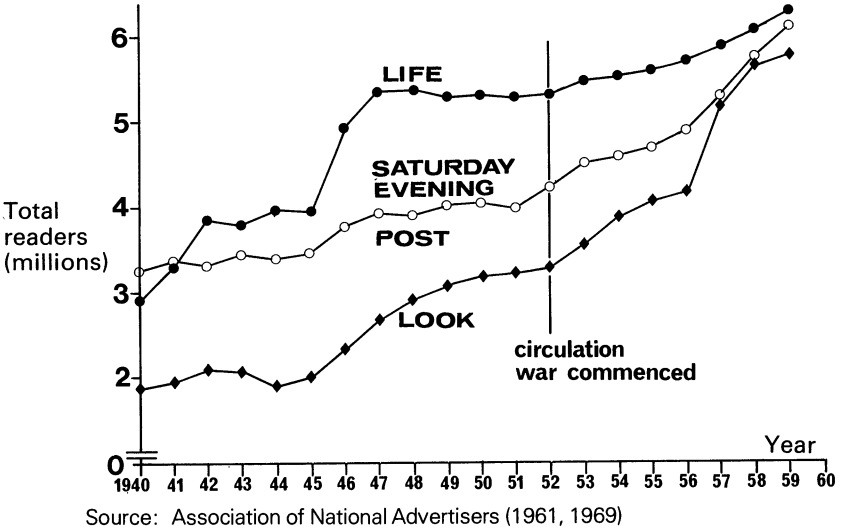
Phase 3: 1948–1950

This phase can be described as a period of "stagnation." In spite of an ever increasing expenditure of circulation promotion dollars (from $42.0 to $50.6 million constant dollars) the readership scarcely grew at all and in 1951 it actually declined. This can be explained in terms of the reduced renewal rate of regular subscriptions due to the high subscription "rate" and the reduction in the efficiency of selling trial subscriptions as the market returned to normal after the high appeal of the magazine during the immediate postwar period. This drop in efficiency offset the increased promotional expenditure, so that the company was faced with a significant increase in promotional effort just to keep its total readership steady.

Phase 4: 1951–1960

The fourth phase was a period of "forced growth." The decline in total circulation recorded in 1951 must have been of considerable concern to the management. Also, during this period the *Look* magazine began to catch up with the *Saturday Evening Post* and a circulation war erupted (see Figure 12). There seems to have been a sudden realization that readership was the key to unlock future growth, because the management undertook to reduce the subscription "rate" and to inject a massive quantity of promotional dollars. Circulation promotion expenditures increased over the period from around 57 to 93 million constant dollars per year and resulted in a forced growth of readers from 4 to 6.3 million.

Since increasing the subscription "rate" was no longer an acceptable means of raising extra revenue to pay for the ever increasing promotional expenditure, the only available alternative was to increase the advertising "rate." This "rate" was consequently raised from an average of $19.5 to $36.1 thousand constant dollars per page. Unfortunately, the rate of



Source: Association of National Advertisers (1961, 1969)

Figure 12. A comparison of magazine readership.

increase in readers did not match the rate of increase in the advertising "rate." Hence, the real price of advertising rose from an average $4.61 to $5.74 constant dollars per page per thousand readers and the advertisers purchased fewer pages in the magazine.

Through the company standard practice of adjusting editorial pages to advertising pages, the editor was limited to fewer editorial pages and the magazine's issues grew thinner, from an annual volume of around 7,600 pages in 1951 to only 5,910 pages in 1960. The yield of regular subscribers from trial subscribers, which has been demonstrated to be dependent on the annual volume of the magazine, consequently dropped. This depressed the profit margin, since it led to the dangerous situation that readership could only be maintained by an ever increasing level of promotional expenditure. By this time, almost one-half of the total readers were trial readers and a smaller proportion of these readers was taking out regular subscriptions as the annual volume of the magazine declined in response to the ever increasing advertising "rate."

During this period, the magazine's readership grew from 4 to 6 million, the company's annual revenue grew from 170 to 225 million constant dollars but its profit margin fell from 8 percent of revenues to a loss position in 1958 and 1959. The company was on the brink of bankruptcy and never really recovered from this policy *cul-de-sac* of too high a subscription rate, too high an advertising "rate," a declining annual volume, and a too high promotional expenditure to solicit trial readers to replace the defecting readership.

The Death Throes

The final phase of the magazine's history is not covered by this study, but is mentioned here because the dramatic events that unfolded appear to be a direct result of the weakened financial position brought about by the interaction of the management's previous decisions with the magazine publishing system. The death throes of the ailing *Saturday Evening Post* are well documented by one of the last presidents of the Curtis Publishing Company (Culligan, 1970) and the last editor of the magazine (Friedrich, 1970). The reduction in the volume of pages published necessitated a reduction in the company's printing plant capacity which led to a disastrous strike at the plant. Also, the change to biweekly and then to monthly issues must have seemed threatening to the editors, whose skills lay in the production of a weekly magazine, because they revolted and approached the Board of Directors directly about the matter. In consequence, the president of the company was forced to resign (Culligan, 1970).

There was an attempt to reduce the circulation of the magazine, presumably to save production costs, but this seems to have failed to help its financial plight (Friedrich, 1970: 299). The company also changed its method of reporting its subscription income in the annual financial report to an accounting method that, in the short run, showed the company's operations in a better light (Friedrich, 1970: 65).

The editors resorted to sensationalism as a means of attracting and holding readers. Unfortunately, the company was

successfully sued for libel and heavy damages were assessed in the favor of the parties defamed by the sensational disclosures published in the magazine (Friedrich, 1970: 41–45).

It would seem that the management never really understood the underlying causal structure of their problem and, hence, were never able to discover a satisfactory combination of the major variables under its control that would rescue the magazine. It was discontinued in 1969.

A POLICY FOR SURVIVAL

As mentioned earlier, the root cause of the sagging profit margin lies in the positive feedback loop relating the number of pages in the magazine, and hence its cost, to the number of readers (Figure 8): (1) as the readership increases, (2) the price of advertising decreases stimulating advertising sales, (3) the increased number of advertising pages leads to the addition of more pages of editorial content, (4) the increased volume of pages attracts more trial subscribers to convert to regular readership, which leads to accelerated readership growth and a feeding back of the outcome to further reducing the price of advertising, and so on, until (5) a feedback effect results in which costs rise more rapidly than the revenues and the profit margin is reduced.

If the management were aware of this process, then one might expect it to prevent the production costs from running away by controlling the number of pages in the magazine. Obviously some relationship between advertising and editorial content must be maintained, otherwise the magazine will become all advertising as the readership grows and the price of advertising declines. An obvious way out of this dilemma is to fix the amount of advertising by controlling the price of advertising. Keeping the advertising "rate" per thousand readers constant will achieve this. This is illustrated by experiment #5.

Experiment #5

In this experiment, the subscription "rate" and circulation promotion expense are held constant, but the advertising "rate" is adjusted every simulated year to effect a constant advertising "rate" per thousand readers. The results of this experiment are shown in Figure 13. It can be seen that the advertising "rate" is continually being revised in order to maintain a nearly constant advertising "rate" per thousand readers (Figure 13a). The performance measures do not now

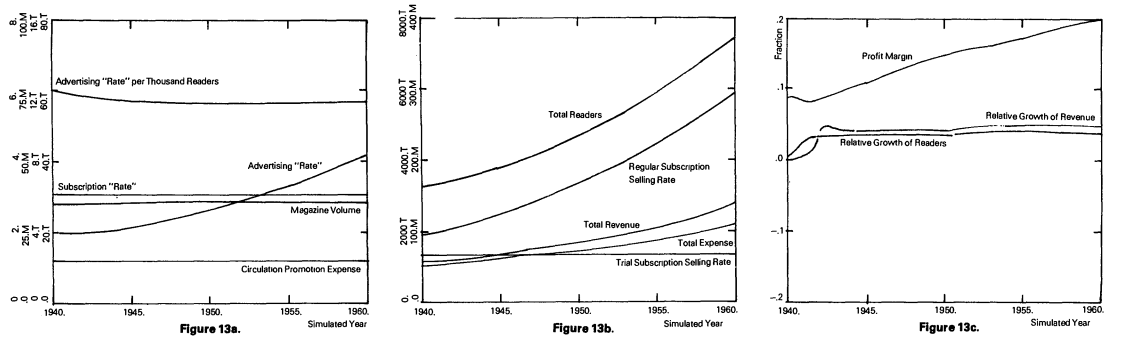


Figure 13. Experiment #5 response to a policy of constant advertising price.

deteriorate. The relative growth of revenues and relative growth of readers measures (Figure 13c) are nearly constant, albeit at a much smaller value than for experiment #1. The profit margin, on the other hand, grows steadily throughout the experiment. The conclusion, therefore, is that continually adjusting the advertising "rate" in order to maintain a constant advertising "rate" per thousand readers, leads to an increasing profit margin and constant revenue and readership growth. Growth of readers and revenues, however, is at a considerably lower level than for experiment #1. The management strategy built into this experiment leads to a profit maximizing rather than to a revenue maximizing behavior of the system.

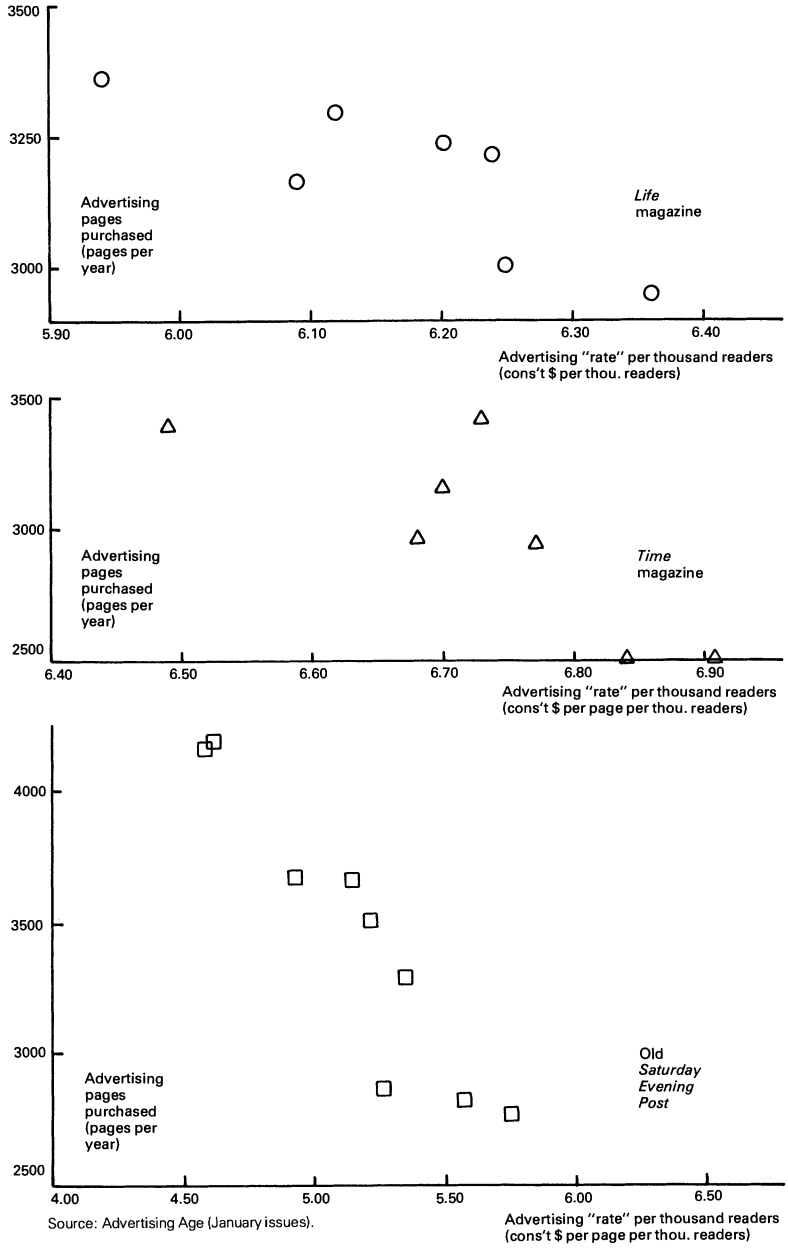
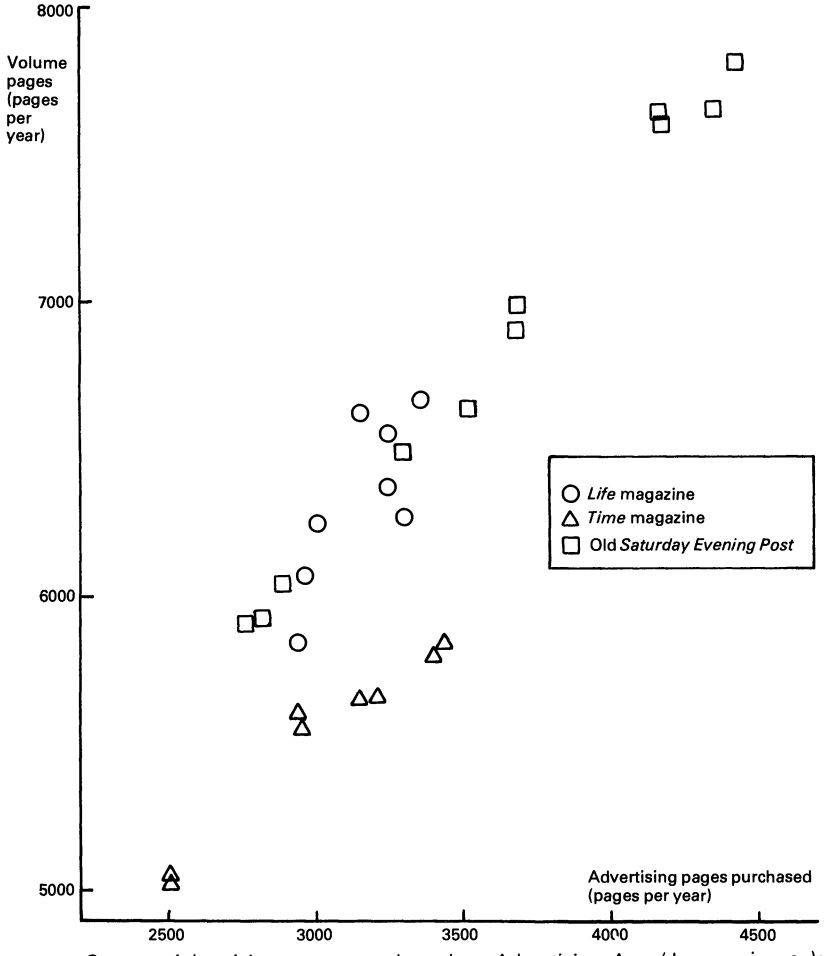


Figure 14. A comparison of advertising demand curves.

This policy is derived logically, albeit intuitively, from a systems analysis of magazine publishing. A more systematic method for discovering higher order policies, involving the year-by-year manipulation of several management variables at once in order to achieve satisfactory performance of a number of conflicting interactive goals has been suggested by Nelson and Krisbergh (1974). This method involves the interfacing of a sophisticated optimum-seeking search procedure, called Razor Search (Bandler, 1971) with a System Dynamics model. This seems to offer promise as a tool for optimal policy making in dynamic interactive multi-objective feedback systems that approximate to real world situations more closely than do the existing static models of the economist and management scientist.

PATHOLOGIES OF MAGAZINES

The question arises, whether the process that has been demonstrated to account for the decline of the old *Saturday Evening Post* is particular to that magazine only, or is a more general description of a malaise than can affect other magazines. The basic assumptions built into this model of cause and effect concern (1) the demand function for adver-



Source: Advertising pages purchased — Advertising Age (January issues); Volume pages — physical count of magazine annual volumes.

Figure 15. A comparison of advertising-editorial formulae.

tising in a magazine, (2) the editorial-advertising formula for a magazine, and (3) the determinants of the readership from the magazine's annual volume size and subscription "rate." These assumptions together with any evidence that has come to hand are used to compare these posited relationships for other magazines with those found for the old *Saturday Evening Post.*

The Demand for Advertising

The number of pages of advertising purchased in a magazine (pages per year) is posited to vary directly with the price of advertising charged by the magazine's publisher (advertising "rate" per thousand readers). Figure 14 compares the plots of advertising pages purchased versus the advertising "rate" per thousand readers for the old *Saturday Evening Post* and two other magazines, suggesting that the posited relationship exists for all three magazines.

The Editorial-Advertising Formula

A magazine's volume size (pages published per annual volume) is assumed to vary directly with the pages of advertising purchased (pages per year) in the magazine by the advertisers. The comparative plots of magazine volume size against advertising pages purchased are shown in Figure 15 for three magazines. This figure also suggests quite strongly that the relationship holds for the other magazines as well as the old *Saturday Evening Post.*

The Determinants of the Readership of the Magazine

The fraction of regular readers who renew their subscriptions and the fraction of trial readers who convert to the regular readership of a magazine are both posited to be a function of the subscription "rate" charged and its annual volume size. The empirical study of the *Saturday Evening Post* indicated a strong relationship between the fraction of regular readers renewing their subscriptions and the subscription "rate" charged. Also, the fraction of trial readers converting to regular readers was found to be markedly influenced by the annual volume size of the magazine. Unfortunately, data are not available in sufficient quantity to test these relationships on other magazines. It would be difficult to imagine, however, a magazine where at least the key relationship between subscription renewals and magazine volume size did not exist. It may not be a continuous variable, as the case of the *Saturday Evening Post,* but at least there must be a lower limit of magazine volume size at which point readers can no longer find enough editorial material of interest to them to make it worthwhile renewing their subscriptions. As long as such a relationship exists—and it would seem intuitively obvious that it would—then there is a possibility of a magazine's publisher getting caught up inadvertently in a series of events described by Forrester (1970: 55) as:

> In other words, the known and intended practices of the organization are fully sufficient to create the difficulty, regardless of what happens outside the company or in the marketplace. In fact, a downward spiral develops in which the presumed solution makes the difficulty worse and thereby causes redoubling of the presumed solution.

A DISCUSSION OF SOME OMISSIONS IN THE STUDY

Two assumptions are implicit in this study: (1) that the quality of editorial content does not affect the sale of subscriptions

and advertising, and (2) that the market of trial subscribers is limitless, are perhaps, difficult to accept.

The Quality of Editorial Content

The editorial direction of a magazine obviously must be of importance, particularly when a magazine is new. It is the editorial flavor of the magazine—its visceral appeal as one editor put it—that enables it to be launched successfully on the newsstands in the first place. However, this study does not cover the beginning or end events in the life of a magazine but rather the middle period when it enjoys a stable relationship with its environment. These stable relationships assume a stable editorial quality of the magazine. If the editor incurs the ire of his readers or advertisers, he is replaced, as was discussed earlier. The editorial direction of the magazine also determines, to a large extent, the characteristics of its audience. This in turn affects the demand for advertising. The different slopes of the demand curves for advertising for, say, the old *Saturday Evening Post* and the *Life* magazine (Figure 14) exemplify this phenomenon. The old *Saturday Evening Post* was reputed to appeal to readers who lived in small towns and rural communities, whereas the *Life* magazine appealed more to urban dwellers. The differences in the slopes of the advertising demand curves could be attributed to the desirability, on the part of the advertisers, to communicate their messages to one type of audience rather than to the other. Therefore, editorial direction and quality of content will affect indirectly the advertising sales, but this effect is a constant parameter embodied in the slope of demand curve as far as this study is concerned.

A Limitless Supply of Readers

The hidden assumption concerning a limitless supply of trial readers is justified because, over the 20-year period of the study of the old *Saturday Evening Post,* no sign of a saturating market could be discovered. In spite of references to the increasing cost of acquiring additional readers (see for example: ''Editorial,'' *Saturday Review,* 1970), the exact opposite was found to apply to the old *Saturday Evening Post.* This was attributed to the increased technical efficiency of selling trial subscriptions by mass mailing reduced-price subscriptions offers. If the magazine had become slimmer then it might have become harder to retain readers. The management of the magazine must then spend more on circulation promotion to maintain the level of readers. It might easily be beguiled into thinking that the cost of acquiring each additional reader had increased, whereas in actual fact the cost remained constant and the yield of regular subscribers from trial subscribers had declined. The market for a magazine obviously cannot be limitless and must saturate some day, but by broadening its appeal and by bringing out foreign editions, mass-circulation magazines seem to find ways of putting off that day.

IMPLICATIONS OF THE STUDY

If this experimentation with model building and empirical validation can be performed successfully for a moribund magazine publishing firm, why cannot it be done for other magazine firms that are still in business? And if it can be done for

magazine publishing firms, why cannot it be performed on other firms in other industries? There would seem to be no reason for suggesting that this approach could not be applied more generally. This study might, therefore, point the way to systematizing the construction of corporate system simulation models.

The experiments conducted with such a constructed corporate simulation model might yield useful information about the long-run viability of the organization. One might ask of it such questions as, is the enterprise going to be difficult to manage? How robust is the system to sudden changes in business conditions? How will it grow—steadily or boom followed by bust? Are there any counterintuitive elements in the system that might beguile the management into, unknowingly, pursuing a path to destruction? Are there more optimal policies that the management doesn't know about? The management of the company and its investors would surely find the answers to these questions useful. If this be so, then we have the beginning of a tool for a more refined control of companies.

The methodology might have some merit, from an organizational research point of view, in such fields as leadership, comparative management and behavioral theories of firms. It allows one to contrast the underlying chain of cause and effect at work in the system with the symptoms generated by systemic problems, and then to trace the actions taken by the actors in the real-life drama that unfolds. For example, the various leaders of the Curtis Publishing Company were, to a large extent, the products of the situations that brought them into power. President Walter Fuller turned the company in the 30s and 40s into an integrated printing and publishing empire and his protegé, Robert A. MacNeal, pursued this vertical empire building philosophy by purchasing a paper company for $20-million in 1950. The model suggests that the symptom was rising production costs and the underlying cause was the magazine volume getting out of control. President Matthew Culligan, a man from the advertising industry, was hired to retrieve the sagging advertising sales (1962–1964) but, as we have seen the root cause was the high advertising "rate" driven up by the need to finance the promotion of subscriptions in the circulation war. President Mac Clifford (an expert cost-cutter with the nickname Mac-the-knife) was hired to perform the unpleasant surgical operation on the company's excess capacity (1964–1968), which stemmed from a loss of advertising pages and hence, through the advertising-editorial formula, a loss of editorial pages also. It would seem that the owners, by treating the symptoms of the problems that arose, rather than fathoming the real causes, possibly hired leaders with managerial skills that did not necessarily match the needs of the time, thereby compounding the problem.

The people who work in the magazine industry can be viewed as a group subculture. They meet each other formally and socially to exchange views, ideas and do business. The industry collectively established measures of performance to compare the magazines. Editors tend to compare thickness (number of pages), glossiness, and other more subjective measures of editorial content. Publishers tend to compare

advertising pages and revenue. Presidents tend to look to total revenue, total assets and other measures of bigness. Pecking orders are established and there is a natural rivalry for top or near top positions in the pecking order. At times this competition can be intense and almost senseless. For instance, the circulation war between the big three magazines (Dougherty, 1970):

> And troubles for *Life* in the circulation war came in 1963, when *Look* which had passed *The Post* in 1961, moved into the number one spot. The figures were 7.49 million to 7.17 million . . . And, oh, how *Look* rubbed it in. It ran ads with headlines such as *"Look* is bigger than *Life"* . . . It was this sort of goading, several publishers thought, that led *Life* into taking what they considered a major tactical misstep . . . .

It would seem that when the corporate ego gets involved, a company can take hasty actions that reverberate through the system of publishing with catastrophic results. Tracing these events with a system model, and noting whether they are fed back to reinforce or discourage the original action, might provide valuable insights into the evolution of the distinctly different personalities of organizations found in the same industry.

Lastly, it might be worth noting that the missing link in corporate simulation models is the management decision making processes. Without this link, we cannot expect the model to generate realistic predictions of how a corporation will grow. Although the model gives us useful insights into how the system works and allows us to predict what will happen when certain management decisions are enacted, without a realistic model of management decision making we cannot use the system model to predict outcomes reliably.

If a submodel of the management's collective and intuitive decision making behavior could ever be developed and plugged into a systems model of the organization, then reliable simulations and predictions of the organization's future growth could be made. Developments in the theory of management decision making in an organizational context, within the last decade, have brought this within the bounds of possibility. It was demonstrated that Cyert and March's theory would have predicted correctly the raising of subscription "rates" by the management of the old *Saturday Evening Post* at a time when they would have been better advised to follow another course of action. *The construction of a simulation model of intuitive management decison making would constitute a significant breakthrough in corporate simulation modeling.*

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